Socially-Distanced Learning: Perspectives on Instructor-Guided Virtual Simulation

Background
The COVID-19 pandemic has had important impacts on pediatric training including an unexpected decline in patient volume, leading to fewer experiential learning opportunities for resident physicians with potential adverse impact on comfort and competence in managing a deteriorating patient. Instructor-guided simulation can be used to augment learning as an active learning tool but social distancing rules have restricted in-person options.

Objective
To assess the feasibility and acceptance of an instructor-guided simulation exercise on care escalation conducted virtually for pediatric residents.

Methods
We piloted a simulation curriculum integrated into a virtual 2-hour resident educational session dedicated to escalation of care. The conceptual frameworks for the curriculum were situated learning, deliberate practice and reflection. The case was a patient experiencing a hyperkalemic arrest, with learning objectives focused on early recognition and management of an unstable patient, team communication and effective resource utilization. Using Laerdal software technology, we generated a simulated patient monitor visible to learners capable of real-time manipulation of patient vitals based on learner management of the virtual patient. The scenario concluded with a communication exercise of learner handoff to the instructor acting as the oncoming code team leader. The instructor then performed a debrief session focused on the pre-specified learning objectives. Anonymous electronic surveys were then distributed to evaluate perceptions on virtual simulation as a learning tool and the importance of instructor guidance compared to self-directed learning.

Results
30 of 38 (79%) second-year pediatric residents participated in the virtual simulation exercise and 20 completed the survey resulting in a 67% response rate. The same 10 minute scenario was conducted on two separate days with 14 residents on the first day and 16 on the second. Residents were further separated into breakout groups of 4-6 for the virtual simulation exercise. All learning sessions were administered via video conferencing. Of the respondents, 95% agreed that the virtual simulation exercise was an effective learning tool. 95% of participants agreed that the presence of a facilitator was preferable to self-directed review of concepts. All of the respondents endorsed a desire to participate in more virtual simulation exercises, if made available.

Conclusion
Introduction of a virtual simulation exercise into an escalation of care curriculum was feasible and allowed for greater engagement and interaction than other virtual learning modalities. Learner feedback suggested a positive educational experience as well as the importance of facilitator presence, allowing for reflective practice and timely feedback specific to each learner. Additional study is needed to examine the effectiveness of this teaching modality but

could better support learning during the on-going pandemic and even be more broadly applied to remote learners in resource-limited settings to provide cost-effective and personalized learning exercises.

The conceptual framework of self-directed learning is currently used for PALS certification scenarios and is becoming increasingly more necessary in the age of social distancing. Unfortunately, self-directed learning is dependent on learner-driven initiative and is at risk for becoming a passive experience. KEEPING THIS HERE FOR MANUSCRIPT